

Notice of Allowability

Application No.

10/518,510

Examiner

Brian M. Healy

Applicant(s)

SHIMODA, TSUYOSHI

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2883

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

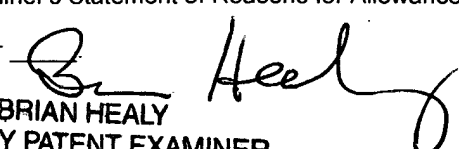
1. ☒ This communication is responsive to the preliminary amendment filed 12/21/2004.
2. ☒ The allowed claim(s) is/are 22-42.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date 12212004
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other 

BRIAN HEALY
PRIMARY PATENT EXAMINER

DETAILED ACTION***Allowable Subject Matter***

The following is an examiner's statement of reasons for allowance: (Note Claims 1-21 have been cancelled.) The closest prior art of record, i.e. Japanese Patent application No. 03-158802 (Hitachi) and U.S.P. No. 5,143,577 (Haas et. al.) both teach in Figs 1-5 and 1a-d both teach the use of optical waveguides (and methods of making same) formed with waveguide cores 5,13' that use smoothing layers 8,15 in the boundaries between the core and cladding layers 9,7,18,12 in order to combat optical loss caused by waveguide roughness.

Neither Hitachi or Haas et. al. teach or suggest the optical waveguide circuit (and method of making same) with at least one waveguide with a slap waveguide connected to at least one waveguide and also including a first core, a cladding that buries the first core and a second core that is formed between the first core and cladding and covers at least part of the first core, where the refractive index of the second core is higher than the refractive index of the cladding with the boundary between the second core and the cladding is made smooth (Claim 22). Claims 23 has limitations similar to that of claim 22 with additional limitations relating a plurality of branching (or converging) cores and a second core that is formed between the first cores and cladding so as to cover up at least a part of each of the first cores and is formed in the gaps between the first cores at the position in the vicinity of the branching (or converging) points and the film thickness of the second core formed in the gaps between the first cores becomes thinner as the interval between the first cores becomes wider (Claim 22). Claim 24 is dependent upon

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claim 23 with the additional limitation the optical waveguide circuit is a Y-branch circuit. Claim 25 has the same limitations as claim 23 with the addition of first and second slab waveguides used between arrayed waveguides. Claim 26 has limitations similar to claim 22, but without slab waveguides with the addition of proximity waveguides in which a plurality of first cores are nearby arranged to each other, a plurality of first cores and a cladding that buries the first cores, a second core that is formed between the first cores in the proximity waveguides and the second core is not formed in the gaps between the first cores other than the proximity waveguide with the boundary between the second core and the cladding is made smooth. Dependent claims 27-38 include the limitations of either claims 22,23,25 and 26 as well as other additional limitations (See the dependent claims for these specific additional limitations) and are considered to be allowable by virtue of their dependency upon the independent claims. Method claims 39-42 include limitations similar to claims 22-26 with the additional limitations of selective etching the core layer to form a first core and applying a heat reflow step to the second core layer to achieve a smooth surface.

A copy of PTO-1449 will be included in this office action.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

The following references are cited by the examiner as being background prior art only: Aylward et. al., U.S.P. No. 6,895,158 (Figs.1-6), Steinberg et. al., U.S.p. No.

6,788,853 (Figs.1-28), Lee et. al., U.S.P. No. 6,850,683 (Figs.1-4), Bazylenko, U.S. Patent Application publication No. US 2003/0026571A1 (Figs.1-4), Chaing et. al., U.S. Patent No. 5,106,211 (Figs.1-2D), Shimoda, U.S. Patent Application Publication No. US 2005/0213913A1 (Note entire reference), and Mo Kang et. al., U.S. Patent Application Publication No. US 2004/0120677A1 (Figs.1-10C).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian M. Healy whose telephone number is (571)272-2347. The examiner can normally be reached on Compressed schedule Mon-Thurs. 6AM-5PM.

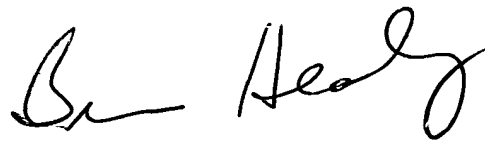
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on (571)272-2415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Brian M. Healy

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**Primary Examiner
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A handwritten signature in black ink, appearing to read "B. Healy". The signature is fluid and cursive, with a large, stylized "H" and "e".

**BRIAN HEALY
PRIMARY PATENT EXAMINER**